DR. H. K. BENSON

The PUGET SOUND CHEMIST

Bulletin of the Puget Sound Section of the American Chemical Society

POSTWAR DEFENSE

COL. ALBERT H. HOOKER

This article was originally intended to be a discussion of the part played by Chemistry in the Armed Forces during the war, the subject matter to be built around wartime experiences in the Chemical Warfare Service as related by a man who has returned to civilian life after serving both in this country and Overseas. Colonel Albert H. Hooker, Western Sales Manager of the Hooker Electro-Chemical Company, was the man approached for this discussion, but we did not find him inclined to sit back and reminisce. Although Colonel Hooker has been back in civilian clothes for months, he certainly did not put away wartime acquaintances and responsibilities with his uniform. He still realizes the tremendous importance of cooperation between industry and the Armed Forces at all times and is intensely interested in maintaining the relationship built up between the two during the war.

On January 17 of this year Colonel Hooker attended the Industry-Army Day program in Chicago. Approximately sixteen hundred U.S. Industrialists gathered for a somewhat "off-the-record" presentation of national defense plans. These men were greatly impressed by the plans outlined for an intelligently directed program to broaden and strengthen our post-war defense. General Dwight D. Eisenhower, Chief of Staff, United States Army, presented the keynote address which followed speeches treating specific problems. The earlier speakers included: Major General Lauris Norstad, Director of Plans and Operations; Major General W. S. Paul, Director of Personnel and Administration; Lieutenant General J. Lawton Collins, Director of Public Information; Major General Henry S. Aurand, Director of Research and Development, and Major General Alden H. Waitt, Chief of the Chemical Corps.

Colonel Hooker was of the opinion that the Chicago meeting pointed a way for better understanding between Industry and the Army and that a similar program on the Pacific Coast would be extremely beneficial. With this thought in mind he volunteered to direct arrangements for a regional meeting to be held at Fort Lewis this summer. As this suggestion met with the enthusiastic approval of General Eisenhower and his War Department staff, Colonel Hooker is at present very busily engaged in perfecting plans for a huge meeting of industrial leaders of this area, patterned after the Chicago meeting. This meeting would be sponsored by the military associations including Air Force, Ordnance, Signal, Transportation and Quartermaster Associations, and the Military Engineers. A dazzling array of army "brass" is expected to lead the meeting throughout a program quite similar to that arranged for the Chicago meeting.

As mentioned before, Colonel Hooker feels that wearing civilian clothing does

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DR. H. K. BENSON RETIRES

The Puget Sound Section of the American Chemical Society feels honored to be able to dedicate this number to probably the most outstanding contributor to the development of chemical industry in the Northwest. Dr. H. K. Benson has given freely of his time to assist in making Washington a greater industrial chemical State and his contributions have, without doubt, added to the national development in the Cellulosic field and other fields.

In June of this year, Dr. Benson, at the age of 70, will retire from the University of Washington. He has completed 43 years of active association with the University, and will continue research work at his discretion.

DR. BENSON THE TEACHER

Dr. Benson is always deeply interested in his students and thoroughly enjoys teaching. Trained in the beginning as a physical chemist, he has always maintained a good fundamental viewpoint and through the years of experience has obtained a thorough grasp of the literature and the practical applications in various fields of industrial chemistry and chemical engineering. He brings to his classwork this broad background and teaches quite as much out of his experience as from the textbook or journal article.

He brings to the classroom his keen sense of humor and enjoys telling a good story. He never scolds but always looks on the encouraging side for constructive effort on the part of the students. Yet he keeps them thoroughly busy getting the laboratory work accomplished and looking up the literature on various topics. The students soon learn the textbook is merely a guide to further acquaintance first-hand with the literature. His lectures are not rushed but given with the deliberateness requisite to sound treatment.

Dr. Benson has always taken a forward look toward providing a curriculum for chemical engineering in keeping with the industrial progress of the times. Some of the innovations made by him in earlier years have now been generally adopted over the country.

He is a devout believer in individual instruction and a close relation between teacher and student. He has a wealth of problems up his sleeve and delights in supervising seniors and graduate students on investigational work. He enjoys the personal conference method of approach and always encourages the student in the use of his own initiative, originality, resourcefulness, and experimental technique in solving problems.

Dr. Benson maintains an abiding interest in his students after they leave the University. He takes time to learn of their progress and achievements, and takes advantage of opportunities to visit the plants in which they are at work. He is always in waiting with his genial smile to give a hearty greeting to his many students of former years who return to the laboratory to renew "auld acquaintance."

A SHORT BIOGRAPHY

Most of the following biography of Dr. Benson is a reprint from the April 1946 issue of the Puget Sound Chemist. The April issue, 1946 was the first number of the publication and we feel it would be worthwhile to reprint Dr. Benson's very interesting biography.

It was sixty-nine years ago on January 3, 1877, when Henry Kreitzer Benson was born in Lebanon, Pennsylvania. He grew up in Pennsylvania and in 1899 was granted the degree of A.B. from Franklin and Marshall College in Lancaster, Pa. During the next year he came to the Pacific Northwest, where he served from 1900 to 1903 as principal of the high school at Kent, Washington. During the summers of these years he continued

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DR. H. K. BENSON . . .

(Continued from page 5)

graduate work and in 1902 received the degree of A.M. from Franklin and Marshall College. In 1903-04 he entered Johns Hopkins University to study chemistry under Remsen and associates. In 1904 Dr. H. K. Benson was appointed assistant Professor of Chemistry at the University of Washington, thus beginning an association of now forty-two years' standing. In 1906 and 1907, he was granted leave to accept a fellowship at Columbia University in New York City and in the latter year he was granted the degree of Doctor of Philosophy from this university. During the ensuing years he continued his work in teaching and research at the University of Washington, being advanced in 1919 to the office of Professor and Head of the Department of Chemistry and Chemical Engineering.

During the summer vacation periods, Dr. Benson rendered many services to the state and national governments. In 1909 he was Assistant in Soil Survey in the Washington Geological Survey and Bureau of Soils, U. S. Department of Agriculture. During the same year he was a commercial agent for the U. S. Department of Agriculture in land clearing studies. In 1912 he acted as agent for the U. S. Forest Service and at this time became interested in the possibilities of wood utilization by destructive distillation and charcoal production. In 1914 he was commercial agent for the U. S. Department of Commerce, publishing the results of his studies in a bulletin: "By-Products of Lumber Industry." From 1915 to 1919 he was Director of the Bureau of Industrial Research at the University of Washington. In 1916 he was State Director of the U. S. Naval Consulting Board. From 1917 to 1920 he acted as consulting chemist for the American Nitrogen Products Company. During World War I, he served as a captain in the Nitrate Division of the Ordnance Department of the U. S. Army.

In 1926 his old Alma Mater, Franklin and Marshall, bestowed upon him the degree of Doctor of Science. Dr. Benson served as chairman of the Division of Chemistry and Chemical Technology of the National Research Council in 1931-32, and it was during this year that he wrote his valuable booklet, "Chemical Utilization of Wood."

During the depression years, Dr. Benson directed the work of a small staff of chemists, engineers, and librarians in compilation of two useful volumes concerned with the potential chemical industries of Washington and of the Columbia Basin. About the same time there was prepared a bulletin on "Wood Chemical Industries of Washington."

In 1938 Dr. Benson was a delegate to the International Conference of Chemistry in Rome, Italy, and visited cellulose and lignin research laboratories in Italy, France, Germany, Finland, and Scandinavia.

Dr. Benson has been a leader in many organizations, being a member of the American Institute of Chemical Engineers, the Technical Association of the Pulp and Paper Industry, and others. He is a member of the Board of Governors of the National Farm Chemurgic Council and has also organized and is now chairman of the Washington State Chemurgic Committee. Dr. Benson, along with Mr. W. E. Breitenbach and Mr. D. B. Davies, was instrumental in bringing about the organization of the technical men of the west coast pulp and paper industry; at the solicitation of these three gentlemen, the first meeting of the technical men of the pulp and paper industry took place on the University of Washington Campus in 1928, and it was at this meeting that the Pacific Section of TAPPI was organized.

Since Dr. Benson completed his doctorate dissertation at Columbia University in 1907 on "Fused Salts Containing Water of Crystalization as Solvents for Determination of Molecular Weights," he has been active in publication and has published more than one hundred papers in the field of wood chemistry and chemical engineering. Some of these papers may be of interest to exemplify Dr. Ben-

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June Meeting

PUGET SOUND SECTION OF THE AMERICAN CHEMICAL SOCIETY

Tuesday • June 17, 1947

7:30 P.M.

Address • Bagley Hall • Room 140

★

SPEAKER

DR. WAYNE MARSHALL

SUBJECT

"SPECTROCHEMICAL ANALYSIS"

★

REFRESHMENTS AND SOCIAL HOUR IMMEDIATELY FOLLOWING THE MAIN ADDRESS

DR. H. K. BENSON . . .

(Continued from page 6)

son's continuing enthusiasm for his profession and for the Pacific Northwest over a period of more than forty years. Note the following papers and years: "Chemical Utilization of Underbrush," Pacific Building Engineer, 1908; "Conservation and Utilization in the Pacific Northwest," Journal of Engineering Chemistry, 1910; "Oil of Douglas Fir," Journal of Industrial and Engineering Chemistry, 1911; "Fractional Distillation of Wood Tar by Electrical Heat," Metallurgical and Chemical Engineering, 1912; "Design and Equipment of the Chemical Engineering Laboratory at the University of Washington," Industrial and Engineering Chemistry, 1912; "Chemical Treatment of Waste Wood," Eighth International Congress of Applied Chemistry, 1912.

In 1914 Dr. Benson was the author of a text book, "Industrial Chemistry for Engineering Students," published by MacMillan. During the following years his publications continued in these and related fields.

The problems of local industry have long been of concern to Dr. Benson. In 1930 he published "The Story of Paper, Production of Pulp in the Pacific Northwest," and "Measurement of Pollution of Sea Water." In 1931 he reported on "Production of Sulfite Pulp from Douglas Fir" and similar woods, on the oxygen consumption method for determination of sea water pollution, and on the detection of sulfite liquor in sea water. In 1933 further reports were rendered on sulfite waste liquor pollution of sea water and on the utilization of sulfite waste liquor. During the period 1935-1937, working under grants by the National Research Council and a group of Washington Pulp Mills, reports were rendered with Dr. A. M. Partansky on the anaerobic decomposition of sulfite waste liquor in the presence of both salt water and fresh water muds. A comprehensive paper on the analysis of sulfite waste liquor, and two papers on sulfite waste liquor were published.

In the last few years Dr. Benson and his collaborators have carried on studies on the pulping of Douglas Fir with ammonium bisulfite and with nitric acid and on such chemical derivatives of lignin as chlorolignin and also nitrolignin. Among many other investigations, Dr. Benson and his co-workers have studied the production of oxalic acid from sulfite waste liquor, and the desulfonation of calcium lignosulfonate (two papers), the pollution of sea water by sulfite waste liquor, and the detection of sulfite waste liquor in sea water by a colorimetric method, and the catalytic oxidation of sulfite waste liquor by atmospheric oxygen.

In 1906 Dr. Benson was married to Eva Ronald, the daughter of the distinguished Judge J. T. Ronald of the King County Superior Court. The Benson's have had four children. Ronald (Mr. W. R. Benson), now living in Seattle with his wife and two children, has followed his father's interest in chemistry and in the pulp and paper industry, and is associated with the Carl F. Miller Company, Inc. Another son, Henry (Lt. Col. H. K. Benson, Jr.), now in Europe with the U. S. Army Occupation Troops, is married and has one child. A daughter, Margaret, is the wife of Major A. V. Martin, Credit Manager for the Caminol Oil Co., Los Angeles, and has two children. Dr. Benson's youngest daughter, Betty, married Harold J. Runstad, a Boeing engineer, and she and her husband and their two children live in Seattle.

Of more recent interest, Dr. Benson visited New York City the latter part of February to attend the Chemical Engineering Award Dinner, the National Chemical Exposition and TAPPI. He has been a member of the Award Committee for Chemical Engineering Achievement for 12 years. Dr. Benson also attended the National TAPPI Convention while in New York, reporting on the "Colorimetric Test for Determination of Waste Sulfite Liquor in Sea Water" before the TAPPI Chemical Methods Committee of which he is a member.

POSTWAR DEFENSE . . .

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not mean that one can step aside from all responsibility to National Defense. He is an ardent supporter of the new Chemical Warfare Association which has been organized primarily to improve relationships established during the war. Although this group was started by men in the Chemical Corps Reserve to preserve the knowledge and associations derived from wartime experience, its membership is open to anyone who may be assigned or detailed to duty with the Chemical Warfare Service in the future. The stated objects of this association are: "To sponsor new developments designed to increase the efficiency of chemical warfare means, to collect and disseminate useful knowledge with respect to chemical warfare and related subjects, to foster a spirit of good will and cooperative endeavor among its members and with industry, and to perpetuate the friendships, memories and traditions growing out of their service with the Chemical Warfare Service." Membership is open to citizens of the United States of America who have a particular interest in the Chemical phase of national defense.

Anyone interested in joining the local branch of this organization is urged to contact Colonel Hooker in Tacoma.

* * *

Colonel Albert H. Hooker, Chemical Corps Reserve, now Western Sales Manager of the Hooker Electrochemical Company at Tacoma was recently requested to reminisce about his wartime experiences. He would be well qualified to tell many interesting anecdotes if he were so inclined, having seen active combat duty in World War I as Chemical Officer of the 27th Division and service in the late war in chemical arsenals, the War Department at Washington, the 8th Army Air Force, and at Edgewood Arsenal. He is past president of the State of Washington Reserve Officers Association, and now Commanding Officer of 613th Organized Reserve Composit Group at Tacome. Colonel Hooker preferred to em-

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OUR COVER PHOTO

RECENT PHOTO

OF

DR. BENSON

SEPTEMBER MEETING will be announced at a later date

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NO SUMMER ISSUE OF THE "PUGET SOUND CHEMIST"

From the Editor's Desk . . .

The Puget Sound Chemist is a magazine designed to be the voice of our A. C. S. Section. The Editor wishes to complain that not enough academic or industrial interest is being shown editorially by the "voices."

Mr. I. F. Laucks launched a very interesting discussion on "Research and the Entrepreneur" in our March, 1947 issue and since that time no other comment on research has been made. Surely the academic boys must have something to say as to how and why research should be done. We would like to have their opinions.

I believe that there is not enough understanding between the industrial researcher — and the basic researcher — we would like to have some opinions on this interesting subject. We are led to believe that the basic researcher works in the dark to bring forth something that the industrial researcher can bring to light, put to work to pay for the basic worker's efforts. Both workers must have an avid imagination, plenty of intuition, but the industrial worker must sift out the dollar and cents value to make economic sound investments for business which in turn must pay the taxes, etc. which support basic research. It is commonly believed that a sound American system is based on a more complete understanding of values from these two scientific workers and neither should discount the other.

The University of Washington and the City of Seattle should not constitute the whole of the Puget Sound Section of the American Chemical Society. A high percentage of our members come from out of Seattle, and the Editor is still looking for talent and response from these members. Your plant, laboratory, office or institution must surely have some changes or material of general interest to the sectional readers — let's hear from all you "out of town" members.

Comment has reached the Editor that the publication does not reach members before the monthly meeting. This situation could be alleviated if members would please have their copy in the hands of the Editor not later than the 20th of each month.

The April and May issues were delayed because of the date on which the Regional Meeting was held. Copy was not received in time for either issue. It takes two weeks to publish the magazine.

Adhesive Symposium Held

The Associated Forest Technologists and Forest Products Research Society held a joint meeting with Plastics Materials Manufacturers Association at the Winthrop Hotel, Tacoma, Washington, on May 27th.

Dr. Bror Grondal of the University of Washington Forestry Department opened the meeting and turned it over to Charles Rozema, Resinous Products and Chemical Company, who presided. A panel discussion on glues started the meeting with Herbert Clark of the Casein Company speaking on animal glue, casein and adhesives of vegetable origin. H. B. de Waide of the Bakelite Corporation spoke on Ureas and their value in Industry. John Bogner of Interlake Chemical Company spoke on the Phenolic Adhesives and Al Golick of Monsanto Company spoke on specialty adhesives. One of the high lights of the meeting was the "Challenge to the Wood Working Industry" given by A. J. Norton. Mr. Norton is well known as a Consulting Chemist and he expressed the view that the wood working Industry was far behind the glue manufacturers and were not taking advantage of the materials offered. Mr. Norton also explained that the present tests for strength values in glue bonds by measuring wood failure was inadequate.

Mr. C. C. Heritage of the Weyerhaeuser Timber Company spoke on some of the problems in the wood industry and also of the economics of the industry in respect to cost, utility and quality.

POSTWAR DEFENSE . . .

(Continued from page 9)

phasize the tremendous importance of National Defense and Industrial Mobilization.

He was one of the 1600 industrialists who attended the Industry-Army Day conference in Chicago on January 17, 1947. The War Department, led by General Dwight D. Eisenhower, Chief of Staff, presented off-the-record national defense plans. All present were tremendously impressed.

This Chicago meeting was sponsored by the following: Army Air Forces Association, Army Ordnance Association, Army Signal Association, Army Transportation Association, Chemical Warfare Association, Quartermaster Association, The Society of American Military Engineers.

Speakers included General Eisenhower, General Jacob L. Devers, Commanding Ground Forces; Major General Lauris Norstad, Director of Plans and Operations; Major General W. S. Paul,

The Puget Sound Chemist

PROFIT AND LOSS STATEMENT

	Expenses	*Income*	*Surplus Balance*
SURPLUS 3/1/47			$ 49.54
MARCH			
Expenses:			
Printing	$283.77		
Income (Advertising)		$335.50	
Net March Gain			$ 51.73
SURPLUS 4/1/47			$101.27
APRIL*			
Expenses:			
Miscellaneous Printing	$302.36		
(Dis. & Adj.)	25.77		
Sub Total	$328.13		
Income (Advertising)		$298.95	
Net April Loss	$ 29.18		
SURPLUS 5/1/47			$ 72.09

**This is not representative because all the 2% discounts allowed for in the four month period (January, February, March, and April) were applied on the books in April.*

Library Committee Report . . .

L. H. BROWN and H. DAUBEN

As the duties of the Library Committee have never been defined, the purpose of this report is probably as much to clarify our own ideas of these duties as to acquaint the membership with the functions which are contemplated. A further purpose is to solicit suggestions.

Broadly, the duties of the Committee are two-fold: the promotion and coordination of library facilities available to members of the Society, and the dissemination of information about these facilities. In particular, the following specific functions have been undertaken:

1. A list of chemical periodicals available at the various libraries in the city will be prepared and made available to the membership.

2. A survey will be undertaken to determine how many of the members use public library facilities, and what they are most interested in — that is, what chemical fields and sources of information within the fields are most used. Suggestions will be solicited, particularly as to whether basic sources of information—such as Beilstein,—or magazines, or technical books should most advantageously be expanded. The results of this survey will be made available to library officials.

3. A list of new chemical books and magazines obtained at the various libraries each month will be published in the Puget Sound Chemist.

Members are urged to donate books and files of magazines to the library. Even though the library may have the same material, it can frequently trade for other publications it needs.

A rapidly growing practice, and one which this committee would like to encourage, is the donation of money, both from individuals and companies, to the library. Too many of us buy books which we read only once, and rarely refer to. If the money were given to the library for the purchase of the particular book, its effectiveness would be multiplied many times.

Facilities would be considerably improved, and our own individual files would be enriched, if library users would make more use of photostating and microfilming. A photostat service unit is located at Room 305 in the University Library, and the service is available to the public. Photostats or microfilms of material available locally, or in other places, may be obtained through this service. Rates on literature avaliable locally are as follows:

RATES

Photostatic Prints–	8½x11 in.	14x18in.
Negative	25c	35c
Positive	20c	25c

A charge of 25c will be made on each order requiring enlarging or reducing.

Films–

35 mm. films Minimum charge 75c

Negative	3c an exposure
Positive	2c an exposure
Enlargements up to 8½x11	10c

Films larger than 35 mm.

Negative	25c
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Lantern Slides–

3⅛x4 in. (black and white)	40c
2x2 in. (black and white)	35c
2x2 in. (color transparencies)	60c

Other Charges–

1. An increase in charge will be made for material that is difficult to handle, requiring an unusual amount of time to copy.
2. Reduction in rates will be made for large orders, or in the case of long-run positive microfilms.

Chemistry Books Added to University Library During April and May, 1947

NIEDERL, J. B., Micromethods of Quantitative Organic Analysis–2nd ed., 1946.

PREGL, FRITZ, Quantitative Organic Microanalysis–4th English Edition, 1946.

ROCHOW, E. G., An Introduction to the Chemistry of the Silicones–1946.

FINDLAY, ALEXANDER, The Phase Rule and Its Application–8th Edition, 1945.

SMITH, O. C., Identification and Qualitative Analysis of Minerals–1946.

BOGUE, R. H., The Chemistry and Technology of Gelatin and Glue–1922.

HAYNES, WILLIAM, American Chemical Industry–1945, Vol. 3.

GATTERMANN, LUDWIG, Laboratory Methods of Organic Chemistry–1946.

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SETTING THE PACE IN CHEMICAL PURITY SINCE 1882

NORTHWEST REGIONAL MEETING—May 2nd and 3rd, 1947—*Space does not permit us to print abstracts of conference papers all in one issue, therefore, these papers will be published throughout the year.*

The Synthesis of O-Diacetyl-benzene and Some of Its Derivatives

WANG, ISENSEE, GRIFFITH and CHRISTENSEN

Abstract: The use of phtalic anhydride in the synthesis of 3-amino, acetamino and nitro-1,2-diacetyl benzene are described. Properties of these compounds are given in some detail.

The synthesis of 3-nitro-2-acetyl benzoic acid are described.

Cyclization experiments with 3-nitro-2-acetylbenzoic acid and 3-acetamino-1, 2-diacetylbenzene and 3-amino-acetylbenzoic acid are discussed.

2-[and3-] o-Aminobenzyl-4-Quinazolone

ARTHUR J. TOMISEK and BERT E. CHRISTENSEN

Abstract: 2-o-Nitrobenzyl-4-quinazolone was prepared from o-nitrophenylacetyl chloride by two separate paths: one was by condensation of this acid chloride with anthranilic acid, and the other by condensation with anthranilamide. Both condensation products were ring-closed to the desired product; but the condensation product of the acid chloride with methyl anthranilate could not be cyclized to the desired product, due to the unusual stability of the ester linkage.

3-o-nitrobenzyl-4-quinazolone was prepared by the condensation of o-nitrobenzyl chloride with sodium 4-quinazolinate.

Both nitro quinazolones were reduced to their corresponding amino derivatives.

Synthesis of 100-Methyl-10-acetoxyanthrone-9

HANS HEYMANN and LUCILLE TROWBRIDGE

Abstract: The compound named in the title is of interest because of the anomalous behavior of acyloxyanthrones towards Grignard reagents (Fieser and Heymann, JACS 64, 376 (1942).

Alpha-Methyl-o-benzylbenzoic acid was prepared from o-benzoyl benzoic acid and methyl magnesium iodide followed by reduction of the pthalide; use of the free acid rather than of the ester (Bergman, J. org. chem. 4, 1, (1939) affords the product in superior yield. Brief treatment with sulfuric acid yielded 10-methylanthrone-9, identical with the product obtained by Barnett's less convenient method (Barnett and Mathews, Ber. 59. 767 (1926). In attempts at conversion of the anthrone to the corresponding oxanthrone acetate, direct acetoxylation with lead tetracetate proved unpromising, and although the compound reacted violently with bromine, a bromoanthrone could not be isolated from the intractable metathesis of the expected bromoanthrone with silver acetate could not be accomplished.

Direct oxidation with chromic acid or with permanganate yielded small amounts of 10-hydroxy-10-methylanthrone-9; this compound was eventually prepared in good yield by oxidation of the anthrone with alcoholic alkaline hydrogen peroxide. The structure of the product was confirmed by dehydration to the known 9-methylene-anthrone; this transformation has to be carried out under rigidly controlled conditions. The oxanthrone was acetylated smoothly with acetic anhydride in pyridine. Preliminary observations indicate that reaction of the acetoxyanthrone with Grignard solution leads to a complex mixture, which is being investigated.

Amino Alcohols Derived from Pyrimidines

RAY CLARKE and B. E. CHRISTENSEN

Abstract: Diethyl oxalate is condensed with ethyl propionate to yield Sodio-diethyl-£-keto-£'-methyl succinate. This is condensed with benzoinidine HC1 to yield 4-carboxy-5-methyl-6-oxy-2-phenyl-pyrimidine. The pyrimidine is chlorinated with Phosphorous penta-chloride,

(Continued one page 16)

To The Editor . . .

I wish to call your attention to a statement on Page 18 of Volume 8, No. 4, of the Puget Sound Chemist, in the second column on Page 18, the following statement is made:

> "A glance at the proceedings of the last annual meeting of the Washington State Horticultural Association will show how completely the fruit growers are now preoccupied with insect and disease infestation. DDT, once hailed as almost the whole answer to the pest problem, at least for the present, has been recommended as giving remarkable control of the Codling moth, leafhopper, orchard mites, and certain other bugs."

Reading this statement gave me quite a shock as I have been closely associated for the past several years with the formation of the recommendations for the use of DDT in the apple producing districts of the State of Washington. We have constantly warned in our recommendations that one of the greatest limiting factors in the use of DDT has been the very serious outbreak of orchard mites following applications of DDT. The statement concerning woolly aphis is essentially correct but the serious infestation of orchard mites that has developed following DDT applications far overshadows the seriousness of a woolly aphis infestation. I would appreciate having this corrected as I feel that this statement is in direct contradiction to our recommendations.

Yours very truly,
TREE FRUIT BRANCH EXPERIMENT STATION
KENNETH C. WALKER
Asst. Chemist

With sincere apologies we print the above letter.—THE EDITOR.

New Laboratory

The D & M Soil Laboratory, 13756 Aurora Avenue, was recently purchased by two chemical engineers, Harry M. Goldberg and Richard P. Fox, both formerly with the Seattle Gas Company. They plan to expand its facilities to give a complete analytical, consulting and formulating service to agriculture and industry in the Pacific Northwest.

ABSTRACTS . . .

(Continued from Page 14)

and the acid chloride converted to Bromoethyl ketone by Arndt Eistert synthesis. This in turn is coupled with various amines to yield the amino ketones which on reduction give the desired amino alcohols.

Poralographic Reduction of Methyl and Ethyl Radicals of Quaternary Ammonium Salts

ARMIN H. GROPP, *University of Oregon*

Abstract: Twenty-four different quaternary ammonium salts have been subjected to polarographic reduction. These salts were, for the greater part, prepared by the addition of an alkyl iodide to either trimethyl or triethyl amine. All the salts were carefully purified and analyzed.

In all cases the unsymmetrical salts containing a methyl group gave a reduction curve whose half-wave potential was —2.45 volts versus the saturated calomel electrode. Most of the unsymmetrical salts containing an ethyl radical gave a similar reduction curve with a half-wave potential of —2.62 volts versus the saturated calomel electrode.

It was not possible to obtain separate reduction for either the tetramethyl or tetraethyl ammonium ions but the potentials of the waves for a current of about thirty microamperes were —2.75 and —2.84 volts respectively versus the saturated calomel electrode.

Free energy calculations show that the ethyl group of these quaternary ammonium ions is the more electropositive by approximately seven kilocalories in the case of the unsymmetrical ions and by about four kilocalories in the symmetrical ions.

A complete mathematical analysis of the curves has been made and a Nernst equation for the reduction occurring at the dropping mercury cathode has been established. This equation agrees with all the experimental data. The data also indicates that the Ilkovic equation needs further refinement presumably by the inclusion of another factor whose function is as yet undetermined.

The influence of Vitamin D, Diethylstilbesterol, Thiouracil, and Iodinated Casein on Feather Pigmentation in New Hampshire Chicks

JAMES McGINNIS, I. L. KOSIN, and ANNABELLE DECKER, *Washington Agricultural Experiment Station, Pullman, Washington*

Abstract: In studies on feather pigmentation in New Hampshire chicks, it has been found that the abnormal amount of black pigment deposited as a result of vitamin D deficiency can be altered by feeding thiouracil, diethylstilbesterol, or iodinated casein. The feeding of thiouracil to chicks receiving a vitamin D deficiency diet depressed the deposition of black pigment. Diethylstilbesterol also tended to decrease the deposition of this pigment in the feathers of vitamin D deficient chicks. Iodinated casein, on the other hand, tended to increase the amount of black pigment in feathers of chicks fed either a vitamin D deficient or vitamin D supplemented diet.

The deposition of black pigment caused by vitamin D deficiency was readily overcome by the addition of vitamin D to the diet.

The Effect of Chain Length on the Critical Concentration of Paraffin-Chain Salts

E. C. LINGAFELTER and G. R. SHUCK, JR.

Abstract: The Linear relationship between the logarithm of the critical concentration for micelle formation and the number of carbon atoms in the paraffin-chain of colloidal electrolytes was mentioned in 1936 by Hartley. Using some new data obtained by the use of the pinacyanol chloride method combined with data from the literature it is shown that the slope of the line is the same for all of the paraffin-chain salts which have been studied. This includes the alkanesulfonic acids, the sodium alkane-sulfonates, the sodium alkyl sulfates, the alkylammonium halides, the alkyltrimethylammonium halides and some sodium alkylbenzenesulfonates.

June Speaker . . .

BIOGRAPHICAL SKETCH

The speaker at the June meeting, Dr. Wayne Marshall, comes to us from the General Electric Nucleonics Project at Hanford Engineer Works, Richland, Washington, where he has charge of the spectrographic laboratory. Dr. Marshall received his degree of Bachelor of Science at the University of Chicago in 1936. He was awarded the degree of Doctor of Philosophy in Chemistry by the University of Chicago in 1939 for his investigations in spectrochemical analysis under the guidance of Dr. W. C. Pierce, one of the authorities in that field. From 1939-42 he taught at the University of South Dakota. In 1942 he joined the Metallurgical Laboratory of the University of Chicago, a division of the Manhattan district, U. S. Engineers. That laboratory, now the Argonne National Laboratory, will be remembered as the site of the chemical and physical investigations on the plutonium process. Later Dr. Marshall continued his work in the spectrochemical field at the Hanford Engineer Works joining the staff of the General Electric Company. Dr. Marshall's experience in this field and his publications in the analytical chemical journals indicate him to be well fitted to discuss "Spectro-chemical-Analysis."

ARGENTUM VIVUM, Age 3500

There is evidence to indicate that the metal Mercury was known as early as 1600 B. C. Anthropologists have discovered amulets, containing what appeared to be Mercury, entombed with Egyptian mummies. During the Roman era, the fluid metal was called *argentum vivum*, or living silver. Since the time of the ancients, mercury salts have achieved an ever-increasing importance. Metallurgy, chemistry, medicine, temperature recording, and electrical conversion are a few of the categories in which Mercury plays an important rôle today.

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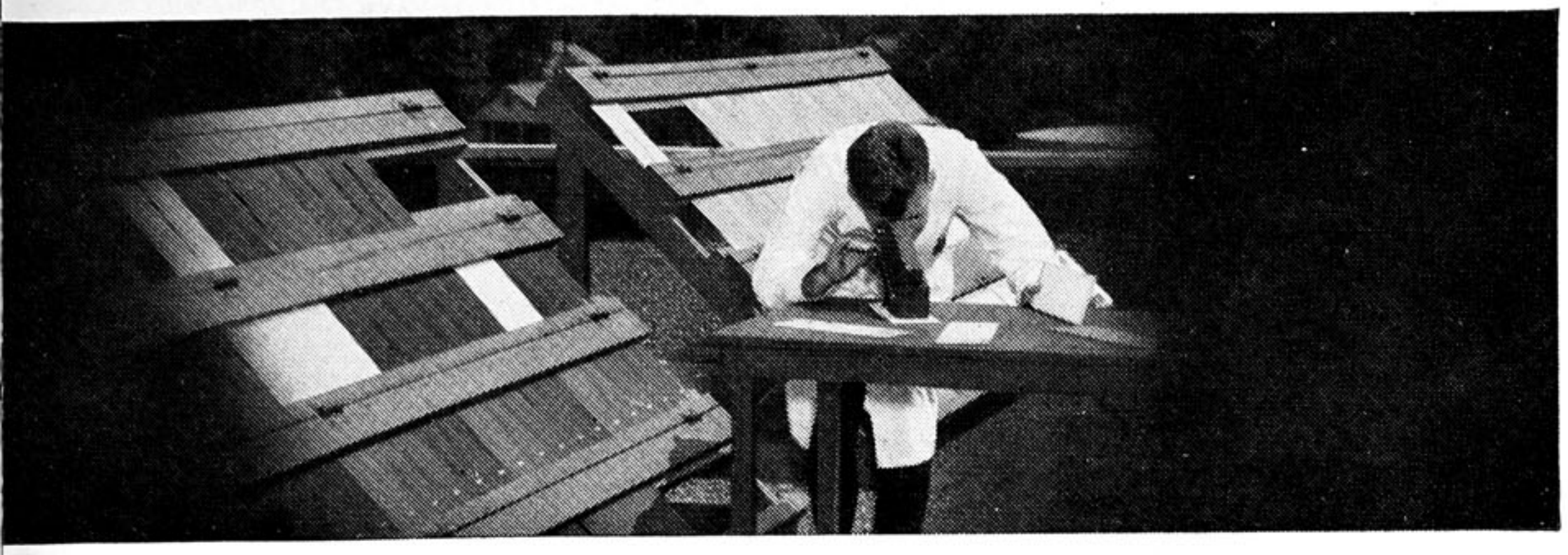

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Student Activities . . .

Phi Lambda Epsilon

The Epsilon Chapter of Phi Lambda Upsilon wishes to announce the admission to its membership of the following initiates: F. Norman Grimsky, Daniel W. Drumiler, Lyman L. Handy, Arthur H. Every, Arthur G. Denker, Vernon Stiles, James H. Madison, Melvin V. Hunter, Welcome W. Wamsley, Richard D. Mullineaux.

The banquet in honor of the initiates was held May 10th. Dr. Delbert Miller of the Sociology Department was the guest speaker. His topic was "Man as Examined Under the Sociologist's Microscope."

Welcome Wamsley received the Sophomore Award because of his scholastic achievement (Highest grade point.)

The annual election of officers was held Monday, May 19th. The results were as follows: President, Gilson Rohrback; Vice-President. Ted Beck; Secretary, L. A. Wilcox; Treasurer, Harry Skewis; Alum. Secretary, Girard Ordway.

Rohrback and Wilcox were elected as delegate and alternate, respectively, to the triennial national convention which is to be held in East this fall.

—L. A. WILCOX, *Secretary*

Iota Sigma Pi

Oxygen Chapter of Iota Sigma Pi held its annual election on Wednesday, May 21st. and elected the following officers for the coming year: President. Carol Green; Vice-President. Betty Cehrs; Secretary. Klarese Lere; Treasurer. Myrtle Logue.

Barbara Allan and Velma Chambers were listed as the two new pledges.

The annual picnic will be held on Saturday. May 24th. at Lincoln Park. and a large attendance is expected.

—KLARESE LERE, *Secretary*

A. I. Ch. E. Held in Portland

The 15th meeting of the Washington-Oregon Section. A. I. Ch. E. was held on May 13th in Portland, Oregon. This was the first meeting of the section to be held in Oregon.

The program started with a moving picture of the expansion program at the Portland Gas & Coke Company taken and exhibited by Mr. Sig Schwartz, Chemical Engineer, for the Gas Company. This was followed by cocktails, dinner, and the speaker for the evening, Mr. William Pittam of the Weyerhaeuser Company, covering the subject "The Hydraulic Barking of Logs." About thirty members attended the meeting which was arranged by the Oregon members of the section who did an excellent job. The next meeting, and, incidentally, the last for the summer, will be held in Seattle sometime in June.

It's Planer When It's Profaner

(AP)—Scientists at the bureau of standards finally had to drop scientific lingo to get across their idea.

Dr. George Russell Harrison, Dean of the Massachusetts Institute of Technology, told the story in a lecture last night:

A foreign born plumber in New York City wrote that he had found hydrochloric acid did a good job of cleaning out clogged drains.

The bureau wrote:

"The efficacy of hydrochloric acid is indisputable, but the corrosive residue is incompatible with metallic permanence."

The plumber replied he was glad the bureau agreed.

Again the bureau wrote:

"We cannot assume responsibility for the production of toxic and noxious residue with hydrochloric acid and suggest you use an alternative procedure."

The plumber was happy again at bureau agreement with his idea.

Then the bureau wrote:

"Don't use hydrochloric acid. It eats hell out of the pipes."